

HIGH FORCE METAL PLATED SPRING STRUCTURE

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ABSTRACT

Lithographically defined and etched spring structures are produced by various methods such that they avoid the formation of a plated metal wedge on an underside of the spring structure after release. A post is utilized to offset the spring from an underlying substrate by a distance greater than the thickness of the plated metal. A trench is etched into the substrate below the spring to provide clearance during deflection of the spring. Another spring includes a knee (bend) that provides the necessary clearance during deflection. A plating process is limited to the upper side of another spring. A released spring is used as a shadow mask for patterning resist that prevents wedge formation during plating. Various tip arrangements are disclosed that can be utilized with each spring structure .